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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,566

01/13/2006

Michael Daniels

TFEL0001

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30438

7590

12/08/2009

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EXAMINER

PATEL, VINOD D

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

12/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,566	Applicant(s) DANIELS ET AL.	
	Examiner Vinod D. Patel	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 12, 13 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 12-13, 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Arguments/Amendments

1. Applicant's arguments/amendments have been fully considered but they are not persuasive as for the following reason:
2. The text of those sections of Title 35, U.S. Code not included in this section can be found in the previous office action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-3, 12-13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills (US4677281) in view of Gordon Jr (US3222497) and further in view of Sopory (US6492629)..

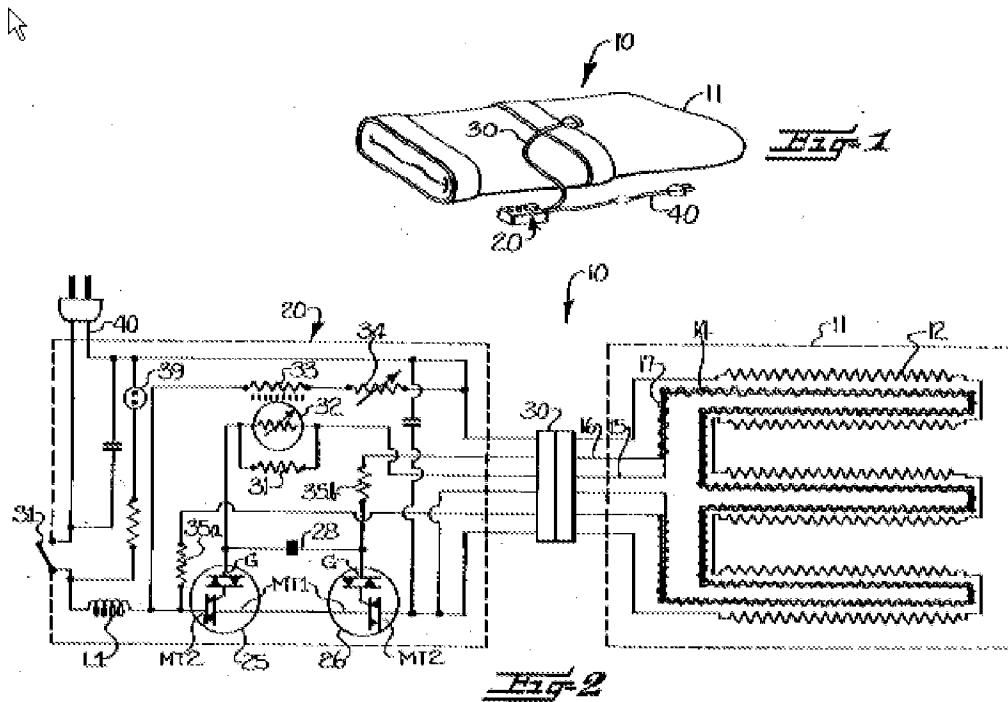
Mills discloses a heating cable (Figure 2, column 3-4) comprising a first conductor (14) comprising a pair of conductors (15,16) which extends along the length of the cable; a second conductor (12) which extends along the length of the cable; a

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separation layer (17) which extends along the length of the cable and is interposed between the pair of conductors (15, 16), an outer insulating jacket (column 4, line 9, US 3222497) extending along the length of the cable and around the first and second conductors and the separation layer wherein the first and second conductors are connected at a first end of the cable in series such that current can flow in both directions through the first and second conductors, the first and second conductors are connected at a second end of the cable to an AC power supply equal currents flow in opposite directions through adjacent portions of the first and second conductors, and wherein the separation layer is formed such that the separation layer has a negative temperature characteristic, and the first conductor is formed such that the first conductor has a positive temperature characteristic (column 6, line 51-51) reduces with increasing temperatures. Mills discloses a heating cable (Figure 3) comprising a first conductor (14') which extends along the length of the cable; a second conductor (12) which extends along the length of the cable; and an outer insulating jacket (column 4, line 9, US 3222497) extending along the length of the cable and around the first and second conductors wherein the first and second conductors are connected at one end of the cable in series such that current can flow in both directions through the conductors, the first and second conductors are connected at the other end of the cable to respective poles of an AC power supply equal currents flow in opposite directions through adjacent portions of the conductors, and the first conductor is formed such that it has a positive temperature characteristic (column 6, lines 40-55).

Mills does not disclose a separation layer in Figure 3 which extends along the length of the cable and is interposed between the first and second conductors; the separation layer has a negative temperature characteristic.

Mills does disclose a separation layer in Figure 2 which extends along the length of the cable and is interposed between the first and second conductors; the separation layer has a negative temperature characteristic.



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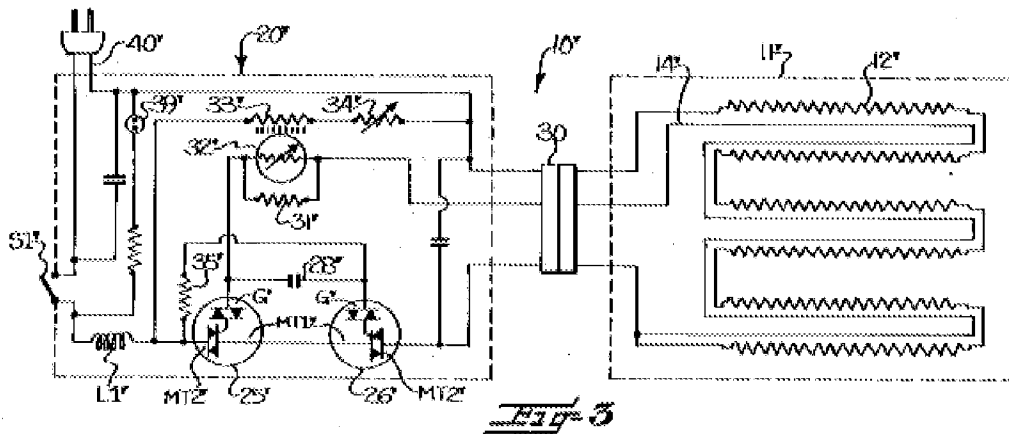
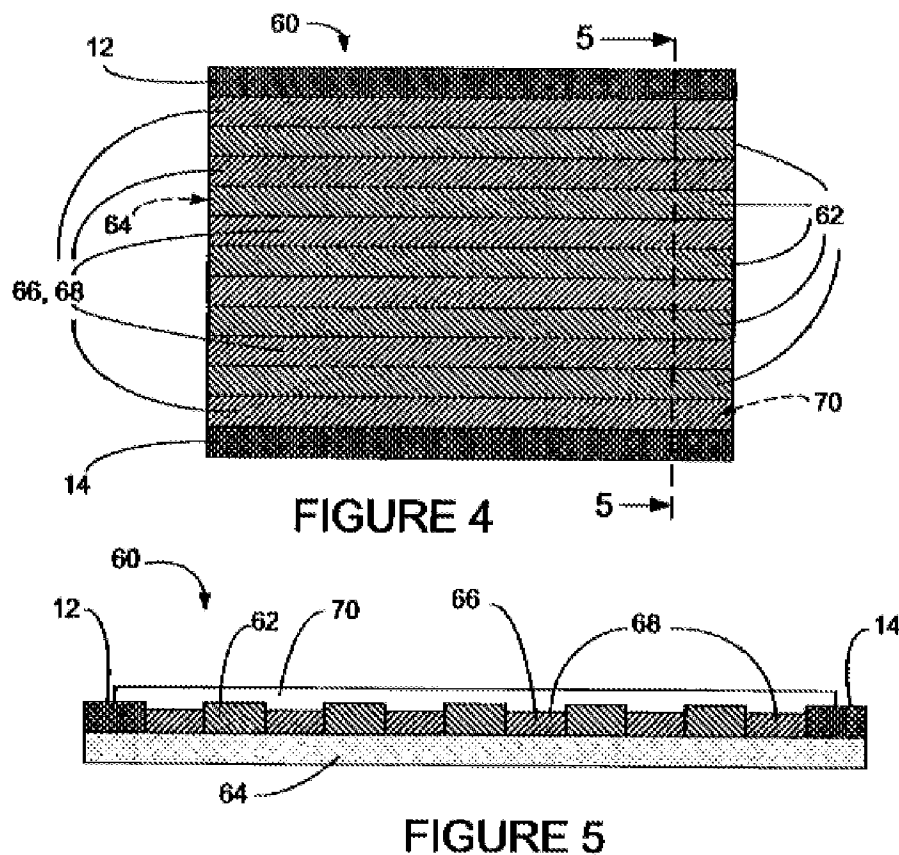


Fig. 3



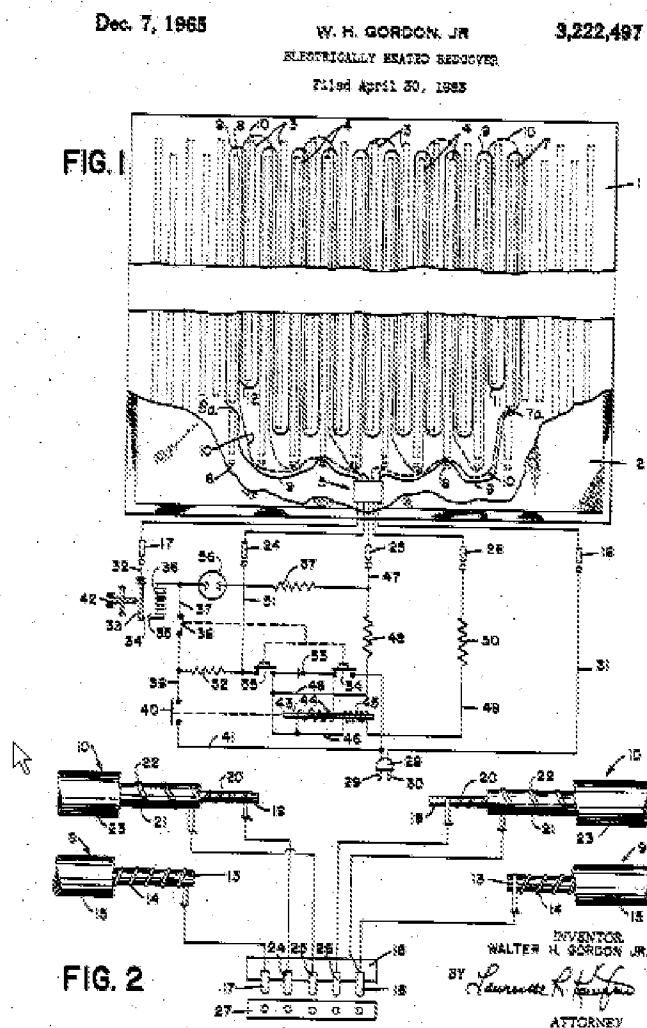
With respect to claim 2, the first and second conductors are coaxial and the separation layer is tubular, the first conductor being located inside the tubular separation layer and the second conductor being located outside the tubular separation layer (column 4, line 9, US 3222497).

With respect to claim 3, the first conductor is formed from twisted together components each of which comprises a fibre core (column 4, line 9, US 3222497) around which a positive temperature coefficient wire has been wrapped to form a helix.

With respect to claim 12, the second conductor is a heating wire wrapped around the tubular separation layer to form a helix.

With respect to claim 13, the second conductor is a heating wire wrapped around the tubular separation layer to form a helix.

With respect to claim 17, the separation layer is formed such that the separation layer melts if heated to a predetermined threshold temperature.



Gordon discloses a sensor wire.

Sopory teaches (column 2, lines 39-52, Figure 4) use of PTC and NTC or ZTC and/or VSM material for use in protection of electrical circuits.

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It would have been obvious to one of ordinary skilled in the art at the time of invention to use a sensor wire as taught by Gordon Jr and a separation layer between two conductors as taught by Sopory in order to protect electrical circuit for the heating cable of Mills by using PTC conductor and NTC separation layer.

Remarks

Applicant's arguments with respect to claims have been fully considered but they are not persuasive. Mills discloses in Figures 2 & 3, "when the first and second conductors are connected at a second end of the cable to an AC power equal flow in opposite directions through adjacent portions of the first and second conductors." With respect to separation layer having negative temperature coefficient, Sopory clearly teaches use of separation layer having negative temperature coefficient. Mills discloses a heater cable as shown in Figures 2 and 3 to generate heat using AC current, equal current flows in opposite direction. The combination of prior art is proper because, (a) Combining prior art elements according to known methods to yield predictable results; (b) Simple substitution of one known element for another to obtain predictable results; (c) Use of known technique to improve similar devices (methods, or products) in the same way; (d) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) " Obvious to try " – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (f) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; (g) Some

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teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINOD D. PATEL whose telephone number is (571)272-4785. The examiner can normally be reached on 7.15 A.M. TO 3.45 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinod D. Patel/
Examiner, Art Unit 3742

/TU B HOANG/
Supervisory Patent Examiner, Art Unit 3742